Psychotropic drugs in the Cervantine texts

Francisco López-Muñoz[1] • Cecilio Álamo[2] • Pilar García-García[3]

[1] Honorary Professor of Pharmacology, Department of Pharmacology, Neuropsychopharmacology Unit, University of Alcalá, Madrid, Spain

[2] Professor of Pharmacology, Department of Pharmacology, Neuropsychopharmacology Unit, University of Alcalá, Madrid, Spain

[3] Honorary Professor of Pharmacology, Department of Pharmacology, Neuropsychopharmacology Unit, University of Alcalá, Madrid, Spain

Correspondence to: Dr Francisco López-Muñoz. E-mail: frlopez@juste.net

DECLARATIONS

Competing interests
None declared

Funding
None

Ethical approval
Not applicable

Guarantor
FLM

Contributorship
All authors contributed equally

Acknowledgements
None

'You have taken the strength from henbane,
with which ungrateful love
drowsed my painful virtue'.
Miguel de Cervantes
The Galatea

Introduction

Miguel de Cervantes (1547–1616) is recognized as one of the most important figures in the history of world literature. While Cervantes' literary production was not prodigious, and occurred late in his life, he has a worldwide reputation due largely to a single work, *Don Quixote* (*El Ingenioso Hidalgo Don Quijote de La Mancha*, 1605).[1] The Cervantine works, and especially *Don Quixote*, have been the object of all types of detailed study across all the fields of human knowledge, including sociology, medicine and therapy.[2–10] In this regard, we might recall the well-known anecdote attributed to Thomas Sydenham (1624–1689), the so-called 'English Hippocrates', who in response to the request for advice from his disciple Richard Blackmore (1654–1729), the poet and court doctor of William III, on the best scientific text for learning medicine, recommended that he read *Don Quixote.*[11]

Cervantes lived in a period in which Spanish medicine was making great progress, most notably in the field of 'medicine of the mind'. However, to talk of 'psychopharmacology' in the late Renaissance is stretching a point somewhat. During this period, the Galenism that had dominated previous eras continued to provide the frame of reference for therapeutic practice, in which, furthermore, the nature of mental illness as a disorder of the humours was often concealed by a preoccupation with exorcism, which considered the 'madman' as possessed.[12] Such conceptions were compounded by an alchemical view of the functioning of the human body. In the late sixteenth century, therefore, pharmacological remedies for internal diseases, be they organic or mental, were scarce, highly unspecific in nature and of vegetable origin. As an example of a hypothetical aetiological remedy we might mention hellebore, obtained from the plant *Helleborus niger*. The emetic properties of this substance were understood at the time as a means of bringing about catharsis, purification or purgation. Thus, vomiting would permit the recovery of '*eukrasia*', that is, the correct combination of humours on which good health was based.[12] Other substances extracted from plants that formed part of the medicinal arsenal of the time were henbane (*Hyoscyamus albus* or *niger*), belladonna (*Atropa belladona*), mandrake (*Mandragora officinarum*), jimsonweed (*Datura stramonium*), and valerian (*Valeriana officinalis*), agents that during the middle ages had been used as poisons in witchcraft and sorcery ('witches' ointments'). Nor should we overlook opium (*Papaver somniferum*), the prototype of sedative agents.

In this context, the literary works of Cervantes constitute a magnificent mirror in which to observe the therapeutic remedies available in late-Renaissance Spain.[6,9–11,13,14]

The pharmacotherapeutic management of madness and psychotropic drug use in Cervantes' works

The difficulty involved in assessing the extent of Cervantes' medical knowledge has been highlighted by various authors.[2,4,8] We should not

forget in this regard that Cervantes, as the son of a surgeon–bloodletter (Rodrigo de Cervantes, 1509–1585), brother of a nurse (Andrea de Cervantes, 1545?–1609) and great-grandson of a Cordoban physician (Juan Díaz de Torreblanca, ?–1512), had considerable knowledge of the art of medicine, a knowledge that pervades his literary work. Moreover, and in particular relation to mental illness, Cervantes would have been able to obtain direct information, both clinical and therapeutic, through his immediate contact with patients at the Seville Mental Hospital.[15] Also, his private library clearly contained several medical texts, including a copy of the famous edition of the *Dioscorides* (1555) annotated by Andrés Laguna (1494–1560) in the mid-sixteenth century.[6] The following passage from *Don Quixote* lead us to suppose that Cervantes had read this work: '"For all that," answered Don Quixote, "I would rather have just now a quarter of bread, or a loaf and a couple of pilchards' heads, than all the herbs described by Dioscorides, even with Doctor Laguna's notes".'[1]

According to Esteva de Sagrera,[9] Cervantes must have known the virtues of numerous plants available from the herbalists of his time for dealing simply and cheaply with different ailments. And in addition to his knowledge of the plants themselves, Cervantes knew the different medical preparations made from them (oils, ointments, balms, poultices, roots, barks and syrups). For example, it is sufficient to mention the famous Balsam of Fierabras (so widely referred to in *Don Quixote*), rhubarb powder, White Ointment, or Aparicio's Oil. We shall continue by examining the pharmacotherapeutic remedies mentioned in Cervantes's works in relation to the treatment of the mental disorders in his characters or their symptoms (Table 1), as well as the psychotropic agents employed as purely recreational drugs or with non-therapeutic objectives (Table 2).

The Balsam of Fierabras: therapeutic panacea

In *Don Quixote,* the therapeutic remedies par excellence are the balms, the most notable of which, given the continual references to its successful use, is the so-called 'Balsam of Fierabras', a kind of panacea for the knight. The Balsam of Fierabras, which falls outside the range of conventional medical therapies of the time, belongs to set of magical remedies that crop up constantly in medieval chivalric literature.[16] It should be borne in mind here that a version of *Chivalric Stories of Charlemagne* acquired some popularity in Spain in the sixteenth century after the publication, in Seville, of a translation into Spanish.[17]

The health-giving and extremely efficacious balm to which Don Quixote refers, administered in this case orally and purporting to cure any type of illness, would consist of oil, wine, salt and rosemary (*Rosmarinus officinalis*), in line with a customary pharmaceutical practice at the time, namely the mixture of various simple medicinal elements (three of vegetable and one of mineral origin) to obtain a compound formula in the style of the famous '*Theriaca*'.[16,18–19] The preparation of the balm (Figure 1) is also described in *Don Quixote* – the four ('simple') components should be heated over a fire and boiled for a good while, after which, finally, the ('compound') product is poured into a tin jug, over which one must say 'more than eighty paternosters and as many more Hail Mary's, "*salves*" and "*credos*", accompanying each word with a cross by way of benediction',[1] in order for the balsam to be effective. As Prieto notes,[16] the recipe described by Cervantes may well have been based on actual formulas available at the time.

The effects of the Balsam of Fierabras are also described by Cervantes: intense vomiting at first, followed by profuse sweating and great fatigue, and finally a deep sleep. On waking (three hours later), the restorative effect was so marked that the nobleman believed himself to be completely cured. Quite possibly, the psychopharmacological effect of the balsam actually derived from its capacity to induce a deep sleep that led to the subsequent reparative effect.[20] Indeed, remedies involving prolonged sleep, with barbiturates and other psychopharmacological agents, have constituted a widely used practice in the history of psychiatry.[21,22]

Among the balm's ingredients, rosemary stands out as the agent to which abundant therapeutic properties have been attributed. A member of the *Lamiaceae* family, rosemary (Figure 2a) is a well known choleretic, as well as diuretic and stimulant.[23] During the sixteenth century, rosemary was an ingredient of numerous preparations, some of a cosmetic nature (e.g. Queen of Hungary's Water) and others more medicinal (e.g. the Balm of Opodeldoc, the Balm of Porras, Aparicio's Oil, or Tranquil Balm).[24]

Purgatives and emetics: the properties of rhubarb

Purgatives are mentioned in *Don Quixote* more than anything because at the time Cervantes wrote the book it was customary, within the general

Table 1
The literary works of Cervantes (excluding his poems)*

(a) Novels

Year	*Title*
1585	La Galatea (*The Galatea*)†
1605	El ingenioso hidalgo Don Quijote de La Mancha (Parte I) (*Don Quixote*) (Part I)†
1613	Novelas ejemplares (*Exemplary Novels*)
	• La Gitanilla (*The Gypsy Girl*)
	• El amante liberal (*The Liberal Lover*)
	• Rinconete y Cortadillo (*Rinconete and Cortadillo*)
	• La española inglesa (*The Spanish-English Lady*)†
	• El licenciado Vidriera (*The Licentiate of Glass*)†
	• La fuerza de la sangre (*The Power of Blood*)
	• El celoso extremeño (*The Jealous Extremaduran*)†
	• La ilustre fregona (*The Illustrious Kitchen-Maid*)
	• Las dos doncellas (*The Two Damsels*)
	• La señora Cornelia (*Lady Cornelia*)
	• El casamiento engañoso (*The Deceitful Marriage*)
	• El coloquio de los perros (*The Colloquy of the Dogs*)†
1614	Viaje al Parnaso (*Voyage to Parnassus*)†
1615	El ingenioso hidalgo Don Quijote de La Mancha (Parte II)† (*Don Quixote*) (Part II)†
1617	Los trabajos de Persiles y Segismunda (*The Labors of Persiles and Sigismunda*)

(b) Plays

Year	*Title*
1582	Tragedia de Numancia (*The Siege of Numantia*)
	El Trato de Argel (*The Traffic of Algiers*)
1615	Ocho comedias y ocho entremeses nuevos (*Eight comedies and Eight New Interludes*) Comedias (*Comedies*)
	• El gallardo español (*The Gallant Spaniard*)
	• Los baños de Argel (*The Baths of Algiers*)
	• La gran sultana doña Catalina de Oviedo (*The Great Sultana Lady Catalina de Oviedo*)
	• La casa de los celos (*The House of Jealousy*)
	• El laberinto de amor (*The Labyrinth of Love*)
	• La entretenida (*The Amusing Woman*)
	• El rufián dichoso (*The Fortunate Ruffian*)
	• Pedro de Urdemalas†
	Entremeses (*Interludes*)
	• El juez de los divorcios (*The Judge of Divorces*)
	• El rufián viudo llamado Trampagos (*Trampagos, the Widower Bully*)
	• La elección de los alcaldes de Daganzo (*The Election of the Daganzo Aldermen*)
	• La guarda cuidadosa (*The Vigilant Sentinel*)
	• El vizcaíno fingido (*The Feigned Biscayan*)
	• El retablo de las maravillas (*The Picture of Marvels*)
	• La cueva de Salamanca (*The Cave of Salamanca*)
	• El viejo celoso (*The Jealous Old Man*)

* There are also four Interludes (*Los habladores; La cárcel de Sevilla; La soberana Virgen de Guadalupe; El hospital de los podridos*) and an Exemplary Novel (*La tía fingida*) attributed to Cervantes.
† Works with references to the use of therapeutic remedies of a psychopharmacological nature or the use of 'recreational' psychotropic drugs.

health framework, to prescribe them as agents capable of eliminating morbid humours, permitting spiritual purification. Thus, the priest of the village whose name Cervantes had no desire to call to mind remarks, in relation to the novel's eponymous character: 'he stands in need of a little

Table 2
Herbal remedies mentioned in Cervantes' works in association with their psychotropic properties

Plant	*Scientific name*	*Family*	*Therapeutic properties*[*]	*Properties described in Cervantes' works*
Chicory	*Cichorium intybus* L.	Asteraceae	Tonic Stomachic Hypnotic	Hypnotic
Gopher spurge	*Euphorbia lathyris* L.	Euphorbiaceae	Purgative Emetic	Purgative
Henbane	*Hyoscyamus albus* and *niger* L.	Solanaceae	Hypnotic Analgesic	Narcotic
Opium poppy	*Papaver somniferum* L.	Papaveraceae	Hypnotic Analgesic Antitussive	Narcotic
Rhubarb	*Rheum officinale* B. *Rheum palmatum* L. *Rumex alpinus* L.	Polygonaceae	Purgative Emetic Tonic	Purgative
Sorrel	*Rumex acetosa* L.	Polygonaceae	Purgative Emetic Tonic	Purgative
Rosemary	*Rosmarinus officinalis* L.	Lamiaceae	Choleretic Diuretic Antispasmodic Vulnerary	Universal remedy[†]
Tobacco	*Nicotiana tabacum* L.	Solanaceae	Purgative Brain stimulant	Psychostimulant
Vervain	*Verbena officinalis* L.	Verbenaceae	Antispasmodic Tonic Antipyretic Anti-inflammatory	Magic properties

[*] Traditional properties, according to Bruneton[23] and Font Quer[24]
[†] As ingredient of Balsam of Fierabras.

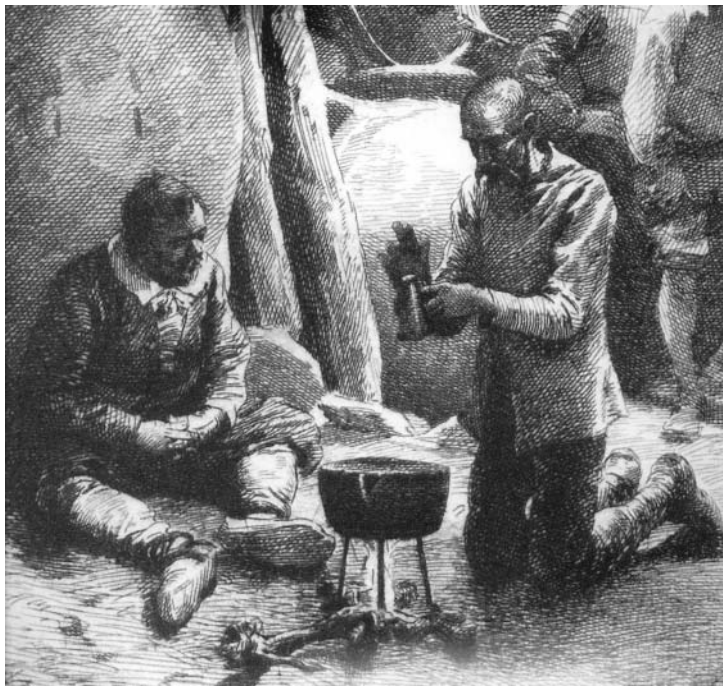
rhubarb to purge his excess of bile'.[1] The rhizome of monk's rhubarb (*Rumex alpinus* and *Rumex patientia*) (Figure 2b), a plant that grows in the North of Spain, rich in tannic and chrysophanic acids, possesses purgative and tonic properties, and was used for purging the choleric and phlegmatic humours.[25] The remaining types of rhubarb (Rheum species), typically Chinese rhubarb, also have laxative properties,[26] though their exotic origin and high price were practically prohibitive for the general population in sixteenth century Spain. In the Iberian Peninsula, however, sorrel (*Rumex acetosa*) (Figure 2c) is widely found. The rhizome of the plant Spaniards call '*romaza*' is, like that of rhubarb, rich in chrysophanic acid. Cervantes, on referring to rhubarb, may well be talking about any of the plants belonging to the genus Rumex. Also referred to in Cervantes' novel is the consumption of the seeds of gopher spurge (*Euphorbia lathyris*) (Figure 2d), commonly known in Spanish as '*ruibarbo de los labradores*' or '*tártago*', a plant now considered as toxic, but popular in the sixteenth century in view of its dual purgative and emetic action. It was said that if one pulled the leaves off downwards, the plant worked as a purgative, whilst if one pulled them off upwards, it would induce vomiting.[24]

A possible explanation of the effects of purgative agents on some psychiatric symptoms may be found in the biological therapies that prevailed in the treatment of mental illnesses in the first third of the twentieth century. From this perspective, the purgative techniques would result in a state of hypoglycaemia that could benefit the course of certain psychotic disorders. Hence, for example, the renowned Sakel cures or insulin comas with which schizophrenic patients in asylums were treated until the mid-twentieth century.[27]

Hypnotic substances: chicory

Chicory water is mentioned by Cervantes in the famous passage about the adventure with the

Figure 1
Detail of a nitric acid engraving by Ricardo de los Ríos (1846–1929) on an original drawing of Jules Worms (1832–1924), entitled *Don Quixote prepares the Balsam of Fierabras*, for the French translation of *Don Quixote* by Cesar Oudin and Francois de Rosset (*L'Histoire de Don Quichotte de la Mancha*, Paris, Librairie des Bibliophiles, 1884)



windmills in *Don Quixote*: 'All that night Don Quixote lay awake thinking of his lady Dulcinea… Not so did Sancho Panza spend it, for having his stomach full of something stronger than chicory water he made but one sleep of it'.[1] This remedy was made by distilling the flowery tops of *Cichorium intybus* (Figure 2e) in water, and was widely employed in the treatment of insomnia, in addition to its use for soothing burning sensations in the liver and relieving opilations.[19] In general, it was a tonic and stomachic medicine. Andrés Laguna gives a detailed description of a wild variety of chicory, *Cichorium hedypnois*, stressing that is was a substance 'giving rise to sweet slumbers, since it induces an oblivious sleep'.[24]

The narcotic effect of henbane and opium

Narcotic and sedative remedies are scarcely mentioned in the literary works of Cervantes. The sole exception is henbane (*Hyoscyamus niger* and *albus*) (Figure 2f), whose mention in *The Galatea* recalls its narcotic properties: 'You have taken the strength from henbane / with which ungrateful love / drowsed my painful virtue'.[1] In *Voyage to Parnassus* there is also a brief reference to the properties of this plant: '… whose crown was of bunches of sacred henbane'.[1]

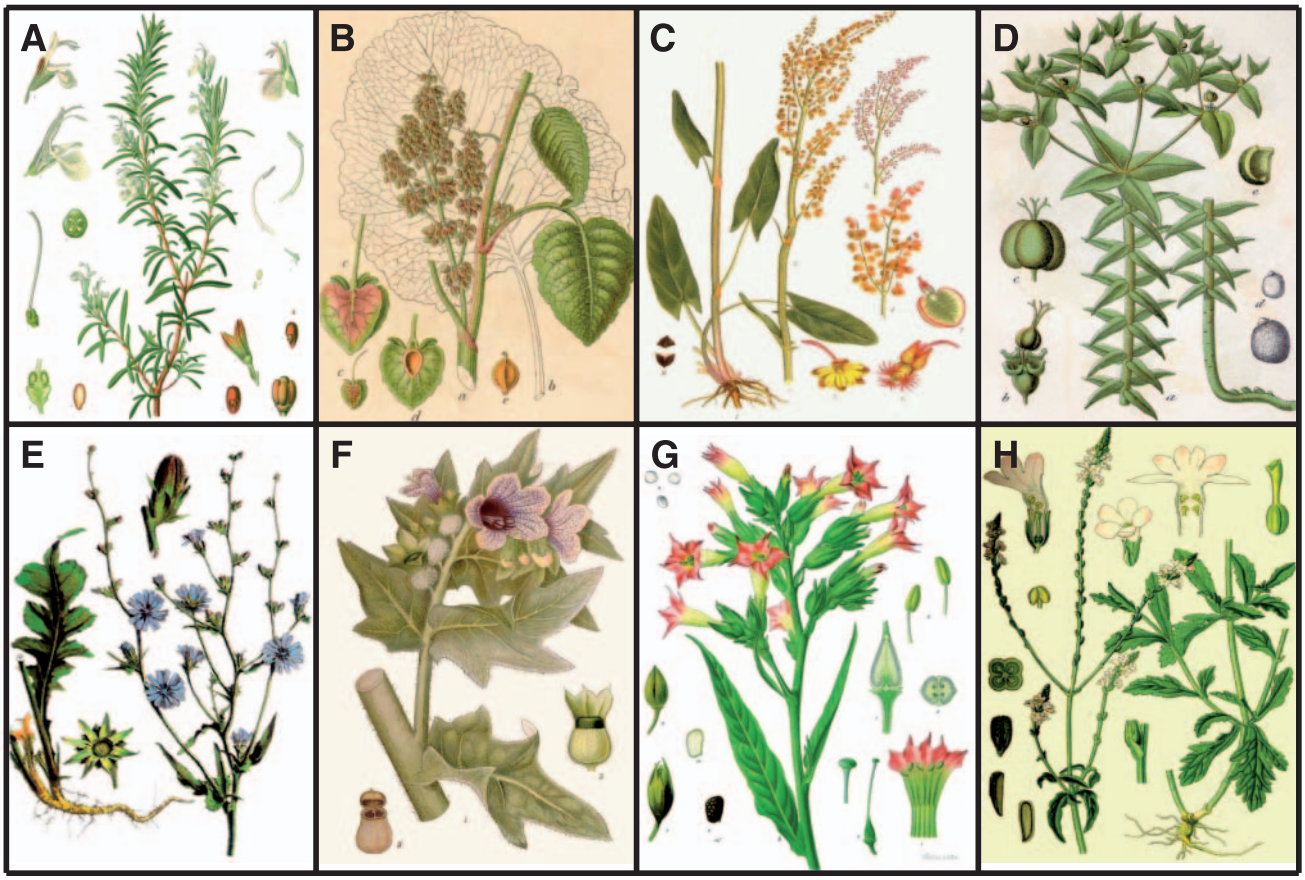
Henbane, known popularly as 'mad herb' and 'flower of death', is, like the rest of the Solanaceae (belladonna, mandrake, jimsonweed, etc.), rich in alkaloids of sedative effect, such as hyoscyamine and scopolamine. This plant had been used since the middle ages as an ingredient of witches' and sorcerers' potions for its hallucinogenic effects, and at a medical level its narcotic properties permitted its use, from the sixteenth century onwards, as an anaesthetic in surgical interventions.[24] However, psychiatric uses of this plant flourished in the second half of the nineteenth century after the isolation of its alkaloids, especially hyoscine and scopolamine.[27]

The lack of reference to such drug types in Cervantes' works, however, is quite possibly due not to ignorance in the author – who was, as we remarked, well acquainted with medical and therapeutic materials – but rather to a desire to avoid attracting the attention of the Inquisition, which took a dim view of these types of medicine.[28] It was for this reason that Cervantes restricted himself to listing the properties of the commonly used herbal preparations, without going into details about their possible composition. Such an interesting approach, with respect to the opium, can be seen in one of his Exemplary Novels, *The Jealous Extremaduran*, when the young wife administers a narcotic preparation to her aged husband:

> *'… the powders, or an ointment, of such virtue that, on applying it to his pulses and his temples, caused a deep sleep, from which nobody could rouse him in two days… and likewise she anointed the windows of his nose… It took little time for the alopiado [opiate] unguent to show signs of its virtues, because the old man soon began to snore loudly… The ointment with which her husband was smeared had such virtues that, without actually taking his life, left a man as though dead.'*[1]

In this passage, Cervantes uses an Italianism (*'alopiado'*) to give account of which the ointment is elaborated with opium. According to Bucalo,[29] this meaning derives from *'alloppiato'*, term used in Italy from the fourteenth century to designate those syrups that contained opiate derivatives.

Figure 2
Botanical laminae of different plants mentioned in Cervantes' works by their psychotropic properties or their use in the treatment of mental diseases



(a) rosemary,* *Rosmarinus officinalis* L.; (b) rhubarb,† *Rumex alpinus* L.; (c) sorrel,† *Rumex acetosa* L.; (d) gopher spurge, *Euphorbia lathyris* L.; (e) chicory, *Cichorium intybus* L.; (f) henbane, *Hyoscyamus niger* L.; (g) tobacco, *Nicotiana tabacum* L.; (h) vervain, *Verbena officinalis* L.
*As principal ingredient of Balsam of Fierabras
† Cervantes' mention of rhubarb could refer to either of these two species

Cervantes habitually used Italianisms in its works,[29] given his voyage around Italy during its youth, although in this case, it could well be a form to mask the explicit reference to the opium.

Psychostimulant agents: the tobacco plant

Curiously, in addition to his failure to mention opium, Cervantes makes no reference in his main novel to the use of tobacco (*Nicotiana tabacum*) (Figure 2g), a plant imported from the New World and whose use, therapeutic and recreational, was extensive in the Habsburg era in Spain, where it was known by various names (e.g. 'devil's weed', 'herb of consolation' or 'herb of all the ills'). Nicolás Monardes (1493–1588), in his *Historia medicinal de las cosas que se traen de nuestras Indias Occidentales que sirven en medicina*, published in Seville in 1574, recommended tobacco for up to 36 different ailments.[30] It was also considered capable of stimulating the brain and the imagination.[24] Nevertheless, in other works of Cervantes, such as his *Voyage to Parnassus*, tobacco sniffing is mentioned as a strange remedy used by poets in order to avoid losing consciousness, especially in cases of intellectual fatigue: 'That which is harvested is tobacco / which for those who are disturbed of head serves / of some feeble-brained poet'.[1]

Figure 3
Witches concocting an ointment to be used for flying to the coven, according with an illustration from a work by a contemporary of Cervantes, *Ein Kurtze Treue Warning* (*A Short, True Warning*), by Abraham Saur (1545–1593), published in Frankfurt in 1582

Hallucinogenic and psychodysleptic substances: witches ointments and love potions

Ointments, in the pharmaceutical context, were preparations for external application made with fats, waxes or resins. However, their extrapharmaceutical or non-therapeutic confection by witch doctors and sorcerers had been customary since medieval times. The proliferation of witches throughout Europe, especially after the twelfth century, impregnated popular culture with a whole series of legends which eventually came to constitute a parallel 'reality', fiercely opposed and fought by the ecclesiastical and civil authorities.[31] Their trials in the courts of the Inquisition confirmed the use of potions and ointments, generally containing hallucinogenic plants such as mandrake, henbane, belladonna (deadly nightshade) or jimsonweed, cooked in their famous cauldrons with fats and a host of other substances (Figure 3).[32] The ingredients of these ointments produced hallucinations in the wakeful state (sensation of flying through the air, sexual fantasies, visions of strange beings, etc.).[24] Cervantes describes these effects in detail in the Exemplary Novel *The Colloquy of the Dogs*, when Berganza refers to the activities of one of her bosses, an old woman known as *La Cañizares*, who confesses to her the practice of acts of witchcraft and the use of specific ointments for these practices:

> *'… This unguent that we witches put on ourselves is made up of the juices of herbs that are in all extreme cold, and is not, as the common people say, made from the blood of the children we drown… I tell you they are so cold that they deprive us of all senses when we spread them on ourselves, and we lie stretched out and naked on the ground, and then they say that in fantasy everything occurs to us that appears to happen in reality. On other occasions, after applying the ointment, it seems to us that we change our form, becoming roosters, owls or crows, and we go to the place where our master awaits us, and there we take on our original form and enjoy the delights of which I have told you… my ointments give me some good times… and the delight is much greater imagined than actually experienced… Before finishing the application of the ointment she said that her body may stay senseless in that room, or it may disappear from it, and that I should not be afraid…'*[1]

In this passage, Cervantes gives a masterly description of the psychotropic effects of mixtures of hallucinogenic agents administered externally (out-of-body travel, visual hallucinations, pleasant sensations, etc.), and concludes with respect to the attribution by the common people of their relationship with magic practices that 'all of these things and similar ones are deception and lies'.[1]

The preparation of brews and 'love potions' with herbal remedies capable of changing the feelings and desires of those who take them, in the context of popular tradition and literature related to witchcraft (we can remember the French romance *Tristan et Iseut*, or the Spanish novel *La Celestina*), is also referred to in some Cervantine works, such as the novel *The Licentiate of Glass*:

> *'And thus, on the advice of a morisca, in a Toledan quince jelly, she gave Tomás one of those so-called spells, believing that he would be unnerved by her forcing his will to love her: as though there were in the world herbs, spells or words sufficient to force free will; and thus, those women who give these love-inducing drinks or foods are called "venefi-cios"; for what they do is nothing short of poisoning the one who takes them, as experience has shown on many and varied occasions.'*[1]

Cervantes also describes the effects of these preparations based on herbs:

> *'Such was the way in which Tomás ate the jelly that he immediately began to suffer in hands and feet as*

though he had alferecía [epilepsy], and he was many hours before recovering; and when he did come round, he was bewildered, and said with clumsy and stammering tongue that a quince jelly he had eaten had killed him… Six months he was in bed, Tomás… and mad with the strangest madness of all the madnesses that up to that time had been seen. Imagine how wretched he was all made of glass…'[1]

Likewise, in the context of witchcraft and with motives related to love, Cervantes refers to the use of poisons as such.[33] Thus, in *The Spanish-English Lady*, the Protestant waitress decides to poison Isabela for having scorned the love of her son:

'And she was determined to kill Isabela with tósigo [poison]… that same afternoon she poisoned Isabela in a preserve that she gave her, obliging her to take it on the grounds that it was good for the anxiety she felt in her heart… Isabela's tongue and throat began to swell up, her lips to turn black and her voice to go hoarse; her eyes glazed over and her chest was tight: all well-known signs of having been poisoned.'[1]

The term Cervantes uses for the poison here (*tósigo*) comes from the Latin '*toxicum*', and is referred to in the *Dioscorides* as a poison that inflames the tongue and the lips and induces madness.[33] For his part, Laguna notes that these types of poison are associated with black hellebore or with wolfsbane (*Aconitum Napellus*).

In any case, at no time does Cervantes refer to the composition of any of these preparations, nor to their ingredients, despite mentioning their herbal origins, and this may well be out of precaution, to avoid any repercussions from the Inquisition. However, from the description of the symptoms experienced by his characters, it may well have been henbane in the case of *The Colloquy of the Dogs*, mandrake in that of *The Licentiate of Glass* and belladonna or black hellebore in *The Spanish-English Lady*. Only in his theatrical comedy *Pedro de Urdemalas* does he refer to vervain (*Verbena officinalis*) (Figure 2h), a plant to which magical properties were attributed, even during the early Baroque: 'Here we have vervain / full of rare virtues'.[1] Vervain is a plant commonly known at the time as the 'sacred herb' because of its use, in the form of posies, in religious ceremonies of antiquity, or 'herb of spells', which highlights its magical character.[24]

Conclusion

The figure of the insane and lunatic person is fairly common in the Cervantine works, but the great literary figure of the Spanish golden age does not restrict himself to describing the profile of these patients and the way they interact with the rest of the social actors; rather, he goes further, showing us many of the therapeutic remedies available at the time for the treatment of such patients, as well as other substances and preparations endowed with the virtue of modifying sense and understanding. It would seem, then, that Cervantes' knowledge of medical matters was quite extensive. By these reasons, the Cervantine texts constitute a valuable tool of study, not only from the slope of the history of the medicine, but from the perspective of medical and social anthropology.

References

1 Cervantes M. *Obras completas*. Madrid: M. Aguilar Editor; 1940
2 López H. La medicina en el Quijote. *Actas Luso Esp Psiquiatr Neurol* 1971;**30**:35–44
3 Reverte Coma JM. Antropología médica del Quijote. Farmacopea en el Quijote. *Prev Sanit Nac* 1992;**76**:38–44
4 Osterc L. Cervantes y la medicina. *Verba Hispanica* 1996;**6**:17–22
5 Peleg R, Tandeter H, Peleg A. The medical Cervantes. *Can Med Assoc J* 2001;**165**:1623–4
6 Eisenberg D. *La biblioteca de Cervantes. Una reconstrucción* At http://bigfoot.com/~daniel.eisenberg
7 Villamil I, Villacián MJ. Cervantes, El Quijote y la medicina. *Rev Med Chile* 2005;**133**:1258–60
8 Montes-Santiago J. Miguel de Cervantes: saberes médicos, enfermedades y muerte. *An Med Intern (Madrid)* 2005;**22**:293–7
9 Esteva de Sagrera J. La farmacia en el Quijote. *OFFARM* 2005;**24**:104–16
10 López-Muñoz F, Alamo C, García-García P. 'The herbs that have the property of healing…': The phytotherapy in Don Quixote. *J Ethnopharmacol* 2006;**106**:429–41
11 Simini B. Miguel de Cervantes, hydropsy, and Thomas Sydenham. *BMJ* 2001;**323**:1293
12 Montiel L. La medicina de la mente en el periodo moderno. In: López-Muñoz F, Alamo C, (eds) *Historia de la Neuropsicofarmacología. Una nueva aportación a la terapéutica farmacológica de los trastornos del Sistema Nervioso Central.* Madrid: Ediciones Eurobook SL; 1998. p. 39–50
13 Chiappo L. La última melancolía de Alonso Quijano, el Bueno. *Actas Psiquiatr Psicol Am Lat* 1994;**40**:69–76
14 Peña S. La locura del Quijote. *Rev Med Chile* 1999;**127**:89–93
15 Alonso-Fernández F. Dos especies psicopatológicas: Don Quijote y el licenciado Vidriera. *Torre Lujanes* 2005;**25**:45–64
16 Prieto JM. El Bálsamo de Fierabrás. *Bol Latinoam Car Plant Med Arom* 2005;**4**:48–51
17 Morales R. *Flora literaria del Quijote. Alusiones al mundo vegetal en las obras completas de Cervantes.* Albacete: Instituto de Estudios Albacetenses 'Don Juan Manuel'; 2005
18 López A. *Molimientos, puñadas y caídas acaecidos en el Quijote.* Alcalá de Henares: Editorial de la Universidad de Alcalá; 1996
19 Puerto J. *La fuerza de Fierabrás. Medicina, ciencia y terapéutica en tiempos del Quijote.* Madrid: Editorial Just in Time SL; 2005
20 Bailón JM. *La Psiquiatría en El Quijote. El diagnóstico de ayer y de hoy.* Barcelona: Ars Medica; 2006

21 López-Muñoz F, Alamo C, Ucha-Udabe R, Cuenca E. El papel histórico de los barbitúricos en las 'curas de sueño' de los trastornos psicóticos y maníacos. *Psiquiatr Biol* 2004;**11**:242–51

22 López-Muñoz F, Ucha-Udabe R, Alamo C. The history of barbiturates a century after their clinical introduction. *Neuropsychiatr Dis Treat* 2005;**1**:329–43

23 Bruneton J. *Farmacognosia. Fotoquímica Plantas Medicinales.* 2nd edition. Saragossa: Acribia SA; 2001

24 Font Quer P. *Plantas Medicinales. El Dioscórides renovado.* 5th edition. Barcelona: Ediciones Península; 2003

25 Valle A. Botica y farmacia en el Quijote. *An Real Acad Nac Farm* 2002;**68**:693–734

26 Foust CM. *Rhubarb: The wondrous drug.* Princeton: University Press; 1992

27 López-Muñoz F, Alamo C, Cuenca E. Historia de la Psicofarmacología. In: *Tratado de Psiquiatría.* Barcelona: Ars Medica; 2005. p. 1709–36

28 Fraile JR, De Miguel A, Yuste A. El dolor agudo en El Quijote. *Rev Esp Anestesiol Reanim* 2003;**50**:346–55

29 Bucalo MG. Los italianismos en las 'Novelas Ejemplares' de Miguel de Cervantes Saavedra. *Cuad Filol Ital Univ Complutense Madrid* 1998;**5**:29–80

30 McKim WA. *Drugs and Behaviour.* New Jersey: Prentice Hall; 1991

31 Caro Baroja J. *Las brujas y su mundo.* 13th edition. Madrid: Alianza Editorial; 2003

32 Levack B. *La caza de brujas en la Europa moderna.* Madrid: Alianza Editorial; 1995

33 Simó L. Los 'tósigos de amor' en las novelas de Cervantes. In: *Espéculo: Rev Est Lit* At: http://www.ucm.es/info/especulo/numero29/tosigos.html